UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,416	07/07/2003	Ki-Ho Jung	678-1201 (P10916)	7426

28249 7590 01/11/2007 DILWORTH & BARRESE, LLP 333 EARLE OVINGTON BLVD. UNIONDALE, NY 11553	**EXAMINER** GONZALEZ, AMANCIO

ART UNIT	PAPER NUMBER
2617	

.SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

		Application No.	Applicant(s)
Office Action Summary		10/614,416	JUNG ET AL.
		Examiner	Art Unit	
		Amancio Gonzalez	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>07 July 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-28* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>07 July 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>12/5/03, 12/16/03</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Priority

1.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which

papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

4.   Claims 1, 2, 7, 10, 15, 16, 21, and 24 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Cimini et al. (US Pat 6928084), herein after Cimini, in view of

Tellado et al. (US Pat 6512797), herein after Tellado.

Consider claims 1 and 15, Cimini discloses a method and system for transmitting

a data block having a smallest peak-to-average power ratio (PAPR) **(see Cimini: Title,**

Abstract, col. 2 lines 25-30) in a selective mapping (SLM) scheme for PAPR reduction

in an orthogonal frequency division multiplexing (OFDM) transmitter that transmits data using multiple carriers **(see Cimini: col. 1 lines 65-67, col. 3 lines 47-54)**. Cimini discloses generating phase-rotated data blocks by multiplying the plurality of data blocks by different phase sequences **(see Cimini: Abstract, col. 3 lines 60-67, col. 4 lines 1-15)**. Cimini discloses inserting side information for identifying the phase-rotated data blocks into a predetermined position of the phase-rotated data blocks **(see Cimini: col. 3 lines 23-26, 67 and col. 4 lines 1-57, claim 7)**. Cimini discloses performing inverse fast Fourier transform (IFFT) on the phase-rotated data blocks containing the side information **(see Cimini: col. 3 lines 35-39 and 64-67, col. 4 lines 49-51)**. Cimini discloses selecting a data block having the smallest PAPR among the inverse fast Fourier transformed data blocks **(see Cimini: col. 3 lines 64-67, col. 4 lines 3-6, col. 5 lines 15-24)**.

Cimini discloses forming sequence of clusters of symbols **(see Cimini: col. 2 lines 25-2)**, but does not particularly refer to duplicating an input symbol sequence to a plurality of data blocks. Tellado discloses duplicating an input symbol sequence to a plurality of data blocks **(see Tellado: Col. 18 lines 21-39 -constellation reads on symbol sequence –see Cimini col. 3 lines 28-34)**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Cimini and have duplicating an input symbol sequence to a plurality of data blocks interpreted as duplicating constellation points, as taught by Tellado, thereby achieving peak-to-average power reduction, as discussed by Cimini **(see Cimini: Title, Abstract, col. 2 lines 25-30)**.

Consider claims 7 and 21, Cimini discloses a method and system for transmitting a data block having a smallest peak-to-average power ratio (PAPR) **(see Cimini: Title, Abstract, col. 2 lines 25-30)** in a selective mapping (SLM) scheme for PAPR reduction in an orthogonal frequency division multiplexing (OFDM) transmitter that transmits data using multiple carriers **(see Cimini: col. 1 lines 65-67, col. 3 lines 47-54)**. Cimini discloses detecting side information from a predetermined position of the data block **(side information reads on embedded in formation -see Cimini: col. 2 lines 20-24 and 43-50, col. 3 lines 8-10, col. 5 lines 40-51)**; and generating an inversion of a phase sequence carriers **(see Cimini: col. 2 lines 27-32)** corresponding to the detected side information and multiplying the data block by the inverted phase sequence **(see Cimini: col. 5 lines 15-24)**.

Cimini discloses performing fast Fourier transform (FFT) on symbol data received, and outputting a data block comprising the FFT symbols **(see Cimini: col. 3 lines 44-46, fig. 1 subsystem 130)**, but does not particularly refer to the data being received on multiple carriers. Tellado discloses receiving data from multiple carriers **(see Tellado: Col. 5 lines 7-8, col. 11 lines 66-67, col. 12 lines 1-5, col. 26 lines 48-49)**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Cimini and have it include data received from multiple carriers, as taught by Tellado, thereby improving data transmission by taking advantage of available bandwidth in two-way communication systems.

Consider claims 2, 10, 16, and 24, Cimini, as modified by Tellado, teaches claims 1, 7, 15, and 21 above, and further discloses index values and phase sequence (see Cimini: col. 5 lines 5-14).

5.   Claims 3, 11, 17, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cimini et al. (US Pat 6928084), herein after Cimini, in view of Tellado et al. (US Pat 6512797), herein after Tellado, as applied to claims 2, 10, 16, and 24 above, further in view of Jones et al. (US Pat 6233271), herein after Jones.

Consider claims 3, 11, 17, and 25, Cimini, as modified by Tellado, teaches claims 1, 7, 15, and 21 above, but does not particularly refer to log_2U bits. Jones discloses log_2U bits (log_2M reads on log_2U –see Jones: col. 9 lines 38-53, col. 10 lines 10-15). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Cimini and Tellado and have it include log_2M, as taught by Jones, thereby manipulating encoding and modulation techniques in data transmission through in communication systems.

6.   Claims 4, 5, 12, 13, 18, 19, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cimini et al. (US Pat 6928084), herein after Cimini, in view of Tellado et al. (US Pat 6512797), herein after Tellado, as applied to claims 1, 7, 15, and 21 above, further in view of Minowa (US Pat 7103029), herein after Minowa.

Consider claims 4, 5, 12, 13, 18, 19, 26, and 27, Cimini, as modified by Tellado, teaches claims 1, 7, 15, and 21 above respectively, but does not particularly refer to

inserting information before and after data blocks. Minowa discloses inserting

information before and after data blocks (see Minowa: col. 1 lines 30-40). It would have

been obvious to a person of ordinary skill in the art at the time the invention was made

to modify the invention of Cimini and Tellado and have it include information insertion

before and after data blocks, as taught by Minowa, thereby forming data frames in

digital communication systems.

7.   Claims 6, 14, 20, and 28 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Cimini et al. (US Pat 6928084), herein after Cimini, in view of Tellado

et al. (US Pat 6512797), herein after Tellado, as applied to claims 1, 7, 15, and 21

above, further in view of Cimini, JR et al. (US PGPub 200301333433), herein after

Cimini-2, Yuen et al. (US Pat 6160803), herein after Yuen, and Jayalath et al. (NPL:

Reduced complexity PTS and new phase sequences for SLM to reduce PAP of an

OFDM signal), herein after, Jayalath.

        Consider claims 6, 14, 20, and 28, Cimini, as modified by Tellado, teaches claims

1, 7, 15, and 21 above respectively, but does not particularly refer to Shapiro-Rudin

phase sequences, pseudo-random phase sequences, or Newman phase sequences.

Cimini-2 discloses using Shapiro-Rudin phase sequences (see Cimini-2: par. 0048,

claim 11); Yuen discloses using pseudo-random phase sequences (see Yuen: col. 7

lines 2-6, col. 14 lines 40-46, col. 22 lines 34-40); and Jayalath discloses using Newman

phase sequences (see Jayalath: Abstract; second page col. 2; formula 3, fig. 2, third

page col. 2, fig. 5, and the Conclusion). It would have been obvious to a person of

ordinary skill in the art at the time the invention was made to modify the invention of Cimini and Tellado and have it include Shapiro-Rudin, pseudo-random, or Newman phase sequences, as taught by Cimini-2, Yuen and Jayalath, thereby reducing peak-to-average power ratio and interference in communication systems.

8.   Claims 8, 9, 22, and 23 are ejected under 35 U.S.C. 103(a) as being unpatentable over Cimini et al. (US Pat 6928084), herein after Cimini, in view of Tellado et al. (US Pat 6512797), herein after Tellado, as applied to claims 1, 7, 15, and 21 above, further in view of Bottoms et al. (US Pat 5537436), herein after Bottoms.

Consider claims 8, 9, 22, and 23, Cimini, as modified by Tellado, teaches claims 7 and 21 above respectively, and further discloses removing data modulation (see Cimini: col. 2 lines 43-44, col. 5 lines 65-67 and col. 6 lines 1-14), but does not refer to removing side information particularly. Bottoms discloses removing side information (see Bottoms: col. 12 lines 37-48). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Cimini and Tellado and have it include removing side information, as taught by Bottoms, thereby effectively handling control and information data interleaving in a communication system.

Conclusion

9.   Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

10.   Any inquiry concerning this communication or earlier communications from the
Examiner should be directed to Amancio González, whose telephone number is (571)
270-1106. The Examiner can normally be reached on Monday-Thursday from 7:30am to
5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's
supervisor, Nick Corsaro can be reached at (571) 272-7876. The fax phone number for
the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the
Patent Application Information Retrieval (PAIR) system. Status information for published
applications may be obtained from either Private PAIR or Public PAIR. Status
information for unpublished applications is available through Private PAIR only. For
more information about the PAIR system, see http://pair-direct.uspto.gov. Should you
have questions on access to the Private PAIR system, contact the Electronic Business
Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist/customer service whose telephone

number is (571) 272-2600.

Amancio González
AG/ag

January 5, 2007

NICK CORSARO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600